HAZARDOUS MATERIALS MANAGEMENT, INC.

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INDOOR AIR QUALITY AND ENVIRONMENTAL ASSESSMENT

FEDERAL BUILDING
Albuquerque, NM
Building Number NM0024ZZ

G07-91-489

Prepared For:

GENERAL SERVICES ADMINISTRATION

Mr. Dan Thornhill
Safety & Environmental Branch
Fort Worth, Texas

Contract Number: GS-07P-89-HTD-0007
Work Order Number: P-07-91-HT-0069

Prepared By:

HAZARDOUS MATERIALS MANAGEMENT, INC.

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Site Visit:

April 22 and 23, 1991

Report Date: May 24, 1991

INDOOR AIR QUALITY
AND
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TABLE OF CONTENTS

SECTION I

EXECUTIVE SUMMARY

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On April 22 and 23, 1991, Hazardous Materials Management, Inc. (HMMI) conducted an Indoor Air Quality and Environmental Assessment of the Federal Building in Albuquerque, New Mexico. The purpose of this assessment was to identify potential environmental hazards related to indoor air quality, PCB management, hazardous wastes, underground storage tanks, air emissions, pesticide operations, noise, furnishings, solid waste disposal, waste water discharge, and potable water.

This survey was conducted by Mr. Larey Conquergood of HMMI. Our GSA contacts were Ms. Carolyn Briones, GSA Building Manager, Mr. Waldo Griego, GSA Assistant Building Manager, and Mr. Gary McCullar, GSA Maintenance Work Inspector. HMMI would like to thank Ms. Briones, Mr. Griego, and Mr. McCullar for their cooperation and assistance in this assessment.

This assessment reflects the conditions in the building on the days of the survey and should not be used to determine the existence of environmental hazards in the past or future.

This survey revealed a mechanical problem with the outside air dampers on the air handling units 5 west, 6 west, 7 east and west, and 8 east and west. No elevated levels of carbon monoxide, carbon dioxide, or formaldehyde were recorded.

Recommendations for alternatives appear in the "Remedial Alternatives" section of this report.

Larey Conquergood
Environmental Specialist
Hazardous Materials Management, Inc.

SECTION II

BUILDING PROFILE

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FEDERAL BUILDING
Building Number: NM0024ZZ

The Federal Building located at 517 Gold Avenue SW in Albuquerque, NM is an 8 story building completely above ground. There is also a penthouse on the roof and one basement below grade. The building is owned by the Federal Government and is fully occupied by federal employees. Gross square footage of the building measures 274,610 square feet. Floors B through 8 are currently occupied by GSA, Public Health Service, Department of Immigration, U.S. Forest Service, Internal Revenue Service, Soil Conservation Service, Farmers Home Administration, Agriculture Stabilization Service, Albuquerque, Santa Fe Learning Center, Animal and Plant Inspection Services, Office of General Council, and the Corps of Engineers. The maintenance contractor, TCI, is located in the basement. The number of federal occupants is approximately 1,000.

The heating of this building is accomplished with four gas fired boilers. These boilers also supply heat to the Senator Dennis Chavez Building. Cooling is done by chilled water being supplied to the air handling units. Outside air enters through the east and west wall in the penthouse and travels down a shaft to the air handling units. This building was built in 1958 and its primary use is office space.

SECTION III

METHOD OF SURVEY

METHOD OF SURVEY

A walk-through of the Federal building was performed evaluating any potential hazard suspected of harming human health or the environment. This walk-through concentrated on highly suspicious areas including, but not limited to, air handling rooms, mechanical rooms, storage areas, and general office space.

Carbon dioxide (CO_2), carbon monoxide (CO), and formaldehyde (HCHO) levels were determined using a "Drager" pump and appropriate detector tubes spanning the voluntary ranges recommended by the American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE). The "Drager" pump was checked for leaks before each set of samples were collected. The following detector tubes were utilized:

ANALYZE	SAMPLING TUBE NUMBER	STANDARD RANGE OF MEASUREMENT
CO	67 33051	2-60 ppm
CO_2	CH 30801	100-3000 ppm
HCHO	67 33081	0.2-2.5 ppm

Outdoor levels of CO, CO_2, and HCHO were established for comparison purposes. Temperature and relative humidity were measured using an Omega, Model Number RH-20-F temperature and relative humidity meter. Outdoor temperature and relative humidity were also determined for comparison purposes.

The sample locations were chosen by Mr. Conquergood. Each sampling area is representative of what each air handler or series of air handling units produce.

Operations, furnishings, and building components were evaluated to determine if these items possibly contribute to an indoor air problem.

Noise was evaluated utilizing a Quest 2700-5012 Sound Level Meter. This instrument was calibrated before and after sampling to assure accurate reading. Areas determined to have a potential to exceed the OSHA prescribed 85 dBA action level were evaluated. In addition, a background sound level was obtained for GSA records.

Other evaluations included Polychlorinated Biphenyls (PCB's) in transformers, operations with the potential of generating hazardous waste or air emissions, and waste water discharge. Further parameters examined were underground storage tanks, pesticide operations, solid waste disposal, and chemical storage areas.

SECTION IV

DISCUSSION

DISCUSSION

The Federal Building located in Albuquerque, New Mexico is an 8 story building used primarily as office space. The building is fully occupied by several different agencies. This building is connected with the Senator Dennis Chavez Building through a tunnel in the basement.

Indoor air quality can be affected by several identifiable sources. Major causes of indoor air problems arise through inadequate ventilation, inside and outside contamination, microbiological contamination, and building fabric and component contamination. These possible factors affecting indoor air quality were investigated during the on-site visit.

Common indoor air contaminants include carbon dioxide, combustion products (carbon monoxide, nitrogen dioxide), formaldehyde, radon, ozone, asbestos, microorganisms (bacteria, fungi, spores), cigarette smoke, and odorous gases and vapors.

Carbon dioxide is a gas found naturally in the air with concentrations normally ranging form 200 parts per million (ppm) to 400 ppm. Since CO_2 is produced by human cellular metabolism and released during respiration, inside building levels also vary, depending on the number of occupants and sources. CO_2 concentrations in an office building typically build up during the morning, then decrease at noon, with a second peak in the afternoon. Unless the CO_2 is diluted by outside air distributed through the ventilation system, the concentration will increase. Health hazards from exposure to CO_2 in excess of ambient concentrations vary from no effect to lethargy, headaches, dizziness, increased respiration, and nausea. These acute and chronic effects are generally distributed across an entire

group of individuals when the concentrations of CO_2 exceeds 10,000 ppm time weighted average. In addition, individual response thresholds vary greatly among a given population.

The ASHRAE standard of 20 CFM (cubic feet per minute) of outside air per person in non-smoking environments is intended to keep CO_2 concentrations from exceeding 1,000 ppm. No areas tested in the Federal Building exceeded the ASHRAE standard of 1,000 ppm of carbon dioxide. If a space should exceed 1,000 ppm of CO_2, usually increasing the percentage of outside air and decreasing the amount of recirculated air will correct the problem.

Other sources in this building were identified which may contribute to indoor air pollution. These include tobacco smoke, cleaning chemicals, and copy machines. GSA has a smoking policy which allows for smoking in designated areas. Smoking is allowed in the snack bar located in the basement and an area located on the third floor. The cleaning chemicals appear to be well managed. The chemicals are bought in concentrate, mixed in the cleaning contractors office, and then taken to the custodial closets. The copy machines being used, at the present capacity, are not expected to have a negative impact of the indoor air quality of this particular building.

An inspection of the buildings' furnishings, ceiling tile, carpet, and general building components was performed to identify any suspected areas of microbial growth. No sources of growth were identified.

Background noise levels were recorded on each floor and in the same area as the indoor air quality sampling. Several noise levels were recorded and an average obtained. All

noise levels were below OSHA's action level of 85 dBA.

The HVAC (heating, ventilation, and air conditioning) system was evaluated for a variety of parameters which could have an impact on indoor air quality. The heating of the building is accomplished with four gas fired boilers. The boilers also supply heat to the Senator Dennis Chavez Building. Cooling of the Federal Building takes place by chilled water being supplied to the air handling units. There are a total of 16 air handling units. There are 2 per floor with one serving the east side of the building and the other one serving the west side of the building. The conditions of the filters were checked in all of the air handling units. The drip pans and coils were also inspected. The filters, drip pans, and coils were found to be clean and the units appeared to be well maintained. Outside air enters the air handlers through a shaft that extends up to the penthouse. The air intake dampers are located on the east and west walls of the penthouse. No communication between these intake vents and sources of contamination was noted. The outside air dampers in each air handling unit were visually inspected and found in proper working order. The outside air dampers in air handling units 5 west, 6 west, 7 east and west, and 8 east and west were malfunctioning. The dampers in these units were completely closed. The pneumatic controls on these dampers should be adjusted or repaired to where there is a minimum of 10% outside air being introduced at all times. The low levels of CO_2 in the building indicates that the amount of outside air being introduced is adequate for current building occupancy.

The transformers servicing the building are non-PCB containing transformers according to Mr. Ron Johnson, Senior Environmental Scientist, Public Service of New Mexico. There are a total of 36 dry type transformers in the building. They range in size from 1 KVA

(thousand volt amps) to 112.5 KVA with the majority being 30 KVA. The power company that services these transformers is Public Service of New Mexico.

No sources of air emissions were identified which are expected to be governed by State and Federal Laws.

Solid waste disposal is contracted with the city of Albuquerque Sanitary division

Potable water is supplied by the city of Albuquerque.

Waste water is discharged into the city sewer system.

No operations were identified which are suspected of producing hazardous waste.

The cleaning of the building is done by Sylvan, the cleaning contractor.

Pesticides are contracted through the cleaning contractor to Slug-a-Bug. The building is treated once a month or on an on call basis. No mixing or storing of pesticides takes place in this building.

There are no underground storage tanks located on this building's property.

SECTION V

SAMPLE RESULTS

SAMPLE RESULTS

FEDERAL BUILDING
Building Number: NM0024ZZ

INDOOR AIR QUALITY SURVEY

Location	Floor	Date	Time	CO ppm	CO_2 ppm	HCHO ppm
Room 8102 East	8	4/22/91	1:30 PM	<2	600	<.2
Outside Room 8303 West	8	4/22/91	2:05 PM	<2	400	<.2
Outside Room 7426 East	7	4/22/91	2:25 PM	<2	700	<.2
Room 7437 West	7	4/22/91	2:45 PM	<2	600	<.2
Outside Room 6114 East	6	4/22/91	3:05 PM	<2	700	<.2
Outside Room 6313 West	6	4/22/91	3:25 PM	<2	500	<.2
U.S.F.S. Waiting Rm East	5	4/22/91	3:50 PM	<2	500	<.2
Room 5449 West	4	4/22/91	4:10 PM	<2	400	<.2
Room 4024 East	4	4/23/91	8:10 AM	<2	400	<.2
Room 4427 West	4	4/23/91	8:32 AM	<2	500	<.2
Room 3432 East	3	4/23/91	10:25 AM	<2	600	<.2
Room 3301 West	3	4/23/91	10:40 AM	<2	600	<.2
IRS South East Area	2	4/23/91	11:03 AM	<2	700	<.2
IRS North West Area	2	4/23/91	11:22 AM	<2	500	<.2
Outside Room 1420 East	1	4/23/91	11:45 AM	<2	300	<.2
Room 1049 West	1	4/23/91	12:08 PM	<2	500	<.2
Outside West Entrance		4/23/91	1:05 PM	<2	150	<.2
Room 402 East	B	4/23/91	1:25 PM	<2	200	<.2
Outside Room B-433 West	B	4/23/91	1:55 PM	<2	500	<.2

CO = Carbon Monoxide
CO_2 = Carbon Dioxide
HCHO = Formaldehyde
ppm = Parts Per Million in Air

FEDERAL BUILDING
Building Number: NM0024ZZ

INDOOR/OUTDOOR AMBIENT TEMPERATURE & HUMIDITY

Location	Floor	Date	Time	Temp. F°	Humidity
Room 8102 East	8	4/22/91	1:30	76.7	20.4
Outside Room 8303 West	8	4/22/91	2:05	76.3	19.2
Outside Room 7426 East	7	4/22/91	2:25	76.9	19.7
Room 7437 West	7	4/22/91	2:45	77.8	17.3
Outside Room 6114 East	6	4/22/91	3:05	77.2	16.5
Outside Room 6313 West	6	4/22/91	3:25	77.1	16.2
U.S.F.S. Waiting Rm East	5	4/22/91	3:50	77.6	16.1
Room 5449 West	5	4/22/91	4:10	78.0	17.4
Room 4024 East	4	4/23/91	8:10	69.9	18.3
Room 4427 West	4	4/23/91	8:32	73.9	16.9
Room 3432 East	3	4/23/91	10:25	73.6	19.5
Room 3301 West	3	4/23/91	10:40	75.7	18.7
IRS South East Area	2	4/23/91	11:03	75.4	18.5
IRS North West Area	2	4/23/91	11:22	75.2	17.9
Outside Room 1420 East	1	4/23/91	11:45	74.5	18.6
Room 1049 West	1	4/23/91	12:08	74.3	19.3
Outside West Entrance		4/23/91	1:05	72.6	16.1
Room 402 East	B	4/23/91	1:25	75.9	15.6
Outside Room B-433 West	B	4/23/91	1:55	74.4	16.0

FEDERAL BUILDING
Building Number: NM0024ZZ

NOISE SURVEY

Location	Floor	Date	Background dBA	Time	Operations
Room 8102 East	8	4/22/91	53.3	1:30	Office
Outside Room 8303 West	8	4/22/91	54.0	2:05	Hallway
Outside Room 7426 East	7	4/22/91	50.3	2:25	Office
Room 7437 West	7	4/22/91	50.0	2:45	Office
Outside Room 6114 East	6	4/22/91	42.2	3:05	Office
Outside Room 6313 West	6	4/22/91	49.0	3:30	Hallway
U.S.F.S. Waiting Rm East	5	4/22/91	50.5	3:50	Office
Room 5449 West	5	4/22/91	40.5	4:10	Office
Room 4024 East	4	4/23/91	46.9	8:10	Office
Room 4427 West	4	4/23/91	43.2	8:32	Office
Room 3432 East	3	4/23/91	45.7	10:25	Office
Room 3301 West	3	4/23/91	53.6	10:40	Office
IRS South East Area	2	4/23/91	53.5	11:03	Office
IRS North West Area	2	4/23/91	47.3	11:22	Office
Outside Room 1420 East	1	4/23/91	44.5	11:45	Hallway
Room 1049 West	1	4/23/91	54.3	12:08	Office
Outside West Entrance		4/23/91	70.1	1:05	Outside
Room 402 East	B	4/23/91	79.4	1:25	Mech. Rm
Outside Room 433 West	B	4/23/91	53.4	1:55	Hallway

SECTION VI

REMEDIAL ALTERNATIVES

REMEDIAL ALTERNATIVES

1. Outside Air

Outside air dampers in air handlers 5 west, 6 west, 7 east and west, and 8 east and west were completely closed. Repairs or adjustments to the dampers should be made to insure that a minimum of 10% outside air is being introduced to these floors at all times.

SECTION VII

STANDARDS/REFERENCES

STANDARDS/REFERENCES

The American Society for Heating, Refrigeration, and Air Conditioning Engineers(ASHRAE) National Voluntary Consensus Standard 62-1989 "Ventilation for Acceptable Indoor Air Quality" recommends the following maximum concentrations for indoor air contaminants:

Carbon Monoxide (CO)	9ppm
Carbon Dioxide (CO_2)	1000ppm
Formaldehyde (HCHO)	0.1ppm

ppm = parts per million in air

"Guidance for Indoor Air Quality Investigations" National Institute for Occupational Safety and Health (NIOSH), January 1987.

The Occupational Safety & Health Administration Standard for Occupational Noise Exposure 29 CFR 1910.95, sets 85 dBA eight-hour time weighted average noise exposure as the action level at which a hearing conservation program must be implanted.

Underground Storage Tank Guide, Thompson Publishing Group, Salisbury, Maryland, December 1989.

PBS P 5900.2C GSA Safety and Environmental Handbook, Washington, D.C., August 1988.

SECTION VIII

GSA FORM 3559

REPORT FOR FACILITY SAFETY, HEALTH, OR FIRE PROTECTION SURVEY (PART I)

PAGE 1 OF 1 PAGES

1. REPORT CONTROL NO.	2. DATE OF REPORT	3. BUILDING NAME AND ADDRESS	4. BUILDING NO.	5. PBS FIELD OFFICE
607-91-489	05-24-91	FEDERAL BUILDING 517 GOLD AVE. SW, ALBUQUERQUE, NM	NM0024ZZ	

DATE OF SURVEY		7. SURVEY CONDUCTED BY	8. TRAVEL COST INCURRED	9. TOTAL MAN-HOURS EXPENDED
04-23-91	[X] SCHEDULED [ ] FOLLOW-UP [ ] UNSCHEDULED	Larey Conquergood HMMI 2517 SEIFERTH RD., MADISON, WI, 53716	$	

6. DIRECTIVE LEGEND *(Reference in Item 14)*
A - OSHA STANDARD
B - NFPA CODE
C - ANSI STANDARD
D - GSA DIRECTIVE
E - OTHER

11. TYPE OF REPORT *(Check appropriate box(es))*
[ ] (F) - FIRE SAFETY/PROTECTION
[ ] (S) - FACILITY SAFETY & HEALTH
[ ] (O) - OSH
[ ] (I) - PRE-LEASE
[ ] (P) - PRE-OCCUPANCY
[X] (M) - MISC./OTHER

12. CATEGORY *(Reference in Item 16)*
A - SPRINKLERS
B - FIRE ALARMS
C - ELEVATOR
D - EXITS (NFPA101)
E - STRUCTURAL
F - ENVIRONMENTAL
G - OSHA
H - OTHER

13. ITEM NO.	14. REFERENCED DIRECTIVE	15. FINDINGS AND RECOMMENDATIONS *(State finding first, then recommendation, and continue alternately)*	16. CATEGORY (12) AND OCCUPIABLE AREA EFFECTED	17. RESPONSIBLE FOR ABATEMENT	18. ABATEMENT PLAN DATE	19. CORRECTION DATE	20. COMMENTS *(Include cost)*
001	E IIIC RAC=4	Finding: Outside Air Dampers Were Completely Closed In Air Handling Units 5 West, 6 West, 7 East And West, And 8 East And West. Recomendation: Adjust Or Repair Dampers So There Is A Minimum Of 10% Outside Air Being Introduced At All Times.	F&14	BM	10-15-91		